



Material guide



The NORSelast® material is a solid polyurethane polymer primarily designed to be used in durable components in the offshore and subsea industry. However, because of its ability to reduce maintenance costs, it has also been applied in other industries.

The material is based on a polyether polyol which makes it very resistant to hydrolysis.

NORSelast® is mainly used for elastic components whose purpose is to protect equipment and reduce the destructive effect of dynamic forces.

NORSelast® is a multicomponent thermoset polymer with good bonding properties to most other materials. Combining different materials in hybrid or composite solutions gives a wide range of design possibilities when specific functions are to be achieved. By adjusting mixing ratios or adding other additives, specific material properties like stiffness can be tailored for each application.

NORSELAST® 01

Examples of use

Bend stiffeners, bend restrictors, protectors and clamps are examples of components where NORSELAST® 01 is used in the offshore industry.

Fenders, buffers, thimbles, strain reliefs and pulleys are examples from the maritime industry.

For the road and construction industry NORSELAST® 01 is used in flexible signs like the Fleximark®.

Protection mats for areas with high wear, like sandblasting, is a good example of the benefit the high abrasion resistance of the NORSELAST® 01 provides for other industries to reduce maintenance costs.

Documentation

The material has been tested according to DIN 53505, DIN 53504 and DIN ISO 4649 standards. The testing has been done by single measures in room temperature.

The lifetime is estimated to be more than 50 years based on the chemical composition of NORSELAST® 01.

Mechanical properties

	Strength	elongation	Modulus	Modulus	
Norselast® 01 62 shore A	3,0 MPa	611%	1,0 MPa	1,1 MPa	61 mg
NORSELAST® 01 69 shore A	32,0 MPa	486%	2,9 MPa	6,7 MPa	47 mg
NORSELAST® 01 83 shore A	38,6 MPa	475%	5,5 MPa	12,3 MPa	23 mg
NORSELAST® 01 87 shore A	37,9 MPa	610%	5,7 MPa	11,7 MPa	17 mg
NORSELAST® 01 61 shore D	40,7 MPa	333%	20,0 MPa	35,9 MPa	44 mg

NORSelast® 02

NORSelast® 02 has a low process viscosity making this material very suitable to combine with other materials, such as different types of fiber reinforcements etc.

Hardness range: 60 shore-A to 70 shore-D

Temperature range long term: -20°C to +90°C

Examples of use

NORSelast® 02 is used in fiber reinforced components, such as bend stiffeners and bend restrictors. Different types of protectors, clamps and fairings are examples of components where NORSelast® 02 is used in the offshore industry.

Fenders, buffers, thimbles, strain reliefs and polleys are examples from the maritime industry.

Protection mats for areas with high wear, like sandblasting, is a good example of the benefit the high abrasion resistance of the NORSelast® 02 provides for other industries to reduce maintenance costs.

Documentation

The material has been tested according to DIN 53505, DIN 53504 and DIN ISO 4649 standards. The testing has been done by single measures in room temperature.

The lifetime is estimated to be more than 50 years based on the chemical composition of NORSelast® 02.

Mechanical properties

Material	Tensile Strength	Tensile elongation	100% Modulus	300% Modulus	Abrasion
Norselast® 02 65 shore A	7,0 MPa	502%	N/A MPa	N/A MPa	N/A mg
NORSelast® 02 86 shore A	50,0 MPa	380%	8,6 MPa	30,7 MPa	43 mg
NORSelast® 02 89 shore A	46,6 MPa	477%	8,9 MPa	18,5 MPa	45 mg
NORSelast® 02 92 shore A	43,5 MPa	404%	10,4 MPa	24,1 MPa	44 mg
NORSelast® 02 65 shore D	36,6 MPa	327%	N/A MPa	N/A MPa	N/A mg

NORSelast® PIR

The NORSelast® PIR material is a polyisocyanurate polymer based on the same material system as the NORSelast®. It is designed for higher chemical and hydrolysis resistance. The PIR products exhibit increased fire performance, reduced combustibility and higher working temperature limits compared to PU.

Examples of use

NORSelast® PIR is used in industries where minimum elongation is required, like in bend restrictors, bend stiffeners, pipe guides, guide rings, pipe/cable clamps and piggyback saddles/clamps.

Documentation

The material has been tested according to DIN 53505, DIN 53504 and DIN ISO 4649 standards. The testing has been done by single measures in room temperature.

The lifetime is estimated to be more than 50 years based on the chemical composition of NORSelast® PIR.

Mechanical properties

Properties	NORSelast® PIR	Method
Hardness (DIN, 3s)	72 shore D	DIN 53505
Tear strength	46,1 MPa	DIN EN ISO 527
Elongation at break	32 %	DIN EN ISO 527
Abrasion	288 mm ³ 335 mm	DIN ISO 4649 DIN ISO 4649
Density	1166 kg/m ³	DIN EN ISO 845
HDT	102 °C	DIN EN ISO 75-2

NORSelast® S4

The NORSelast® S4 material is a polyurethane hybrid polymer designed to resist H₂S-acid in oil and gas processing. The material has been developed for use in seals, guiders, wear protections and other components in frequently contact with sour service acid.

Documentation

The material has been certified according to ISO23936-2 / NORSO M-710 standard. The testing has documented change in volume, weight, hardness and tensile properties as a function of time for three different temperatures.

Following lifetime has been predicted:

- 480 days at 40 °C provided a service temperature at or below 40 °C
- 7,7 years at 20 °C provided a service temperature at or below 20 °C
- 38 years at 4 °C provided a service temperature at or below 4 °C

Mechanical properties

Material	Modulus at 50% elongation	Modulus at 100% elongation	Tensile Strength	Strain at break
NORSelast® S4 82 shore A	6 MPa	8,5 MPa	40 MPa	400%

*Testing has been done in room temperature

Contact us for more information

post@strukturplast.no
+47 578 66 133

A brand by:

